

REMARKS

The Application has been carefully reviewed in light of the Office Action dated August 18, 2004. Claims 1 to 65 are in the application. Claims 1 to 21, 25 to 37, 39 to 49 and 53 to 58 are being amended, and Claims 59 to 65 are being added.

Reconsideration and further examination are respectfully requested.

Initially, the Office Action rejects Claim 58 as allegedly being directed to non-statutory subject matter. In response, Applicants amend Claim 58, which is believed to obviate the rejection. Reconsideration and withdrawal of the rejection are therefore respectfully requested.

Claims 1, 2, 15, 17, 18, 23, 25, 27 to 30, 43, 45, 46, 51 and 53 and 55 to 57 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,122,613 (Baker), Claims 26 and 54 are rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,070,140 (Tran), Claims 3 to 14 and 31 to 42 are rejected under 35 U.S.C. § 103(a) over Baker and Tran, Claims 3, 16, 31, and 44 are rejected under 35 U.S.C. § 103(a) over Baker, Claims 19 to 22 and 47 to 50 are rejected under 35 U.S.C. § 103(a) over Baker and U.S. Patent No. 6,289,140 (Oliver), and Claims 24 and 52 are rejected under 35 U.S.C. § 103(a) over Baker and U.S. Patent No. 6,434,413 (Applebaum). Reconsideration and withdrawal of these rejections are respectfully requested.

Claims 1, 29 and 57

Claim 1 defines an apparatus for determining a sequence of sub-word unit labels representative of at least two word alternatives output by a word recognition unit in response to a common input word to be recognised. The apparatus comprises a receiver,

aligner, and a processor. The receiver is operable to receive a first sequence of sub-word unit labels representative of a first one of the at least two word alternatives output by the word recognition unit and operable to receive a second sequence of sub-word unit labels representative of a second one of the at least two word alternatives output by the word recognition unit. The aligner is operable to align and to compare sub-word unit labels of the first sequence with sub-word unit labels of the second sequence to form a number of aligned pairs of sub-word unit labels. The processor is operable to process the aligned pairs of sub-word unit labels formed by the aligner, to determine an output sequence of sub-word unit labels representative of the at least two word alternatives.

Applicants submit that the applied art, namely Baker, is not seen to disclose each and every one of the above-identified features, particularly as regards aligning and comparing sub-word unit labels of a first sequence with sub-word unit labels of a second sequence to form a number of aligned pairs of sub-word unit labels, and processing the aligned pairs of sub-word unit labels to determine an output sequence of sub-word unit labels representative of the at least two word alternatives.

Baker is seen to describe using a real-time recognizer and an offline recognizer, both of which generate a list, or table, of word alternatives for a given spoken word of an input utterance. (See col. 8, lines 19 to 55, and Figures 8A and 8B of Baker) The recognizer-generated tables each reflect candidates for the same word, together with a score for each candidate. Thus, in Figure 8A of Baker, the real-time recognizer outputs four candidates for the word “patent” in the utterance, and an associated score for each of the four candidates. Similarly, Figure 8B of Baker shows the candidates and corresponding

scores generated by the offline recognizer for the same word, i.e., “patent”. Baker is then seen to aggregate the scores for like candidates, e.g., “Patton”, generated by the two recognizers to yield a combined score, e.g., 45.75 in the case of “Patton”, as set forth in Figure 8C of Baker. As discussed at col. 10, lines 29 to 36, Baker is seen to time-align the tables to match corresponding speech units. That is, Baker is seen to time-align the tables shown in Figures 8A and 8B which correspond to the same spoken word (e.g., “patent”). Where the scoring provided by the two recognizers for the same spoken word reflect uncertainty as to the actual spoken word, a transcriptionist is presented with the results in order to select the correct alternative for the spoken word.

Accordingly, Applicants submit that the combination of scores for a candidate recognized by two different recognizers for the same spoken word is not seen to be the same as aligning and comparing sub-word unit labels to form a number of aligned pairs of sub-word unit labels, and/or processing the aligned pairs of sub-word unit labels formed by the aligner to determine an output sequence of sub-word unit labels representative of the at least two word alternatives output by a word recognition unit.

Therefore, for at least the foregoing reasons, Claim 1 is believed to be in condition for allowance. Further, Applicants submit that Claims 29 and 57 are believed to be in condition for allowance for at least the same reasons.

Claims 25 and 53

Claim 25 defines an apparatus for determining a sequence of sub-word unit labels representative of at least two words. The apparatus comprises a receiver, an aligner and a processor. The receiver is operable to receive a first sequence of sub-word unit labels

representative of a first word and a second sequence of sub-word unit labels representative of a second word. The aligner is operable to align sub-word unit labels of the first sequence with sub-word unit labels of the second sequence to form a number of aligned pairs of sub-word unit labels. The processor is operable to process the aligned pairs of sub-word unit labels formed by the aligner to determine an output sequence of sub-word unit labels representative of the first and second sequences of sub-word unit labels by determining, for each aligned pair of sub-word unit labels, a sub-word unit label that is confusingly similar to the sub-word unit labels of the aligned pair.

Based on the above discussion of Baker, Applicants submit that Baker is not seen to disclose an aligner operable to align sub-word unit labels of the first sequence with sub-word unit labels of the second sequence to form a number of aligned pairs of sub-word unit labels, and/or a processor operable to process the aligned pairs of sub-word unit labels formed by the aligner to determine an output sequence of sub-word unit labels representative of the first and second sequences of sub-word unit labels by determining, for each aligned pair of sub-word unit labels, a sub-word unit label that is confusingly similar to the sub-word unit labels of the aligned pair.

Therefore, for at least the foregoing reasons, Claim 25 is believed to be in condition for allowance. Further, Applicants submit that Claim 53 is believed to be in condition for allowance for at least the same reasons.

Claims 27 and 55

Claim 27 recites an apparatus for determining a sequence of sub-word unit labels representative of at least two word alternatives output by a word recognition unit in

response to a common input word to be recognised. The apparatus comprises a receiver, a generator, an aligner and a processor. The receiver is operable to receive the at least two word alternatives output by the word recognition unit. The generator is operable to generate, for each received word alternative, a sequence of sub-word unit labels representative of the received word alternative. The aligner is operable to align and compare the sub-word unit labels of each generated sequence of sub-word unit labels to identify a number aligned groups of sub-word unit labels. The processor is operable to process the aligned groups of sub-word unit labels identified by the aligner, to determine an output sequence of sub-word unit labels representative of the at least two word alternatives by determining, for each aligned group of sub-word unit labels, a sub-word unit label that it confusingly similar to the sub-word unit labels of the group.

Applicants submit that Baker is not seen to disclose the above-identified features. More particularly, as described in Baker, at col. 8, lines 19 to 29, a recognizer generates a list, or table, of alternatives for a particular word. However, Applicants submit that this is not the same as generating for each word alternative a sequence of sub-word unit labels. In addition, Applicants submit that selection of the “N-best” alternatives of a particular word that are confusingly similar to the word is not seen to be the same as aligning a generator generating, for each received word alternative, a sequence of sub-word unit labels representative of the received word alternative, an aligner aligning and comparing the sub-word unit labels of each generated sequence of sub-word unit labels to identify a number aligned groups of sub-word unit labels. In addition, nothing in the cited portion of Baker, namely col. 10, lines 11 to 67, is seen to describe a processor operable to

process the aligned groups of sub-word unit labels identified by the aligner, to determine an output sequence of sub-word unit labels representative of the at least two word alternatives by determining, for each aligned group of sub-word unit labels, a sub-word unit label that it confusingly similar to the sub-word unit labels of the group.

Therefore, for at least the foregoing reasons, Claim 27 is believed to be in condition for allowance. Further, Applicants submit that Claim 55 is believed to be in condition for allowance for at least the same reasons.

Claims 28 and 56

Claim 28 defines an apparatus for determining a sequence of sub-word unit labels representative of at least two word alternatives output by a word recognition unit in response to a common input word to be recognised. The apparatus comprises a receiver, an aligner, a first comparator, a second comparator, a combiner, a third comparator, and a processor.

The receiver is operable to receive a first sequence of sub-word unit labels representative of a first one of the at least two word alternatives output by the word recognition unit and operable to receive a second sequence of sub-word unit labels representative of a second one of the at least two word alternatives output by the word recognition unit. The aligner is operable to align and compare sub-word unit labels of the first sequence with sub-word unit labels of the second sequence to form a number of aligned pairs of sub-word unit labels. The first comparator is operable to compare, for each aligned pair, the first sequence sub-word unit label in the aligned pair with each of a plurality of sub-word unit labels taken from a set of predetermined sub-word unit labels, to

provide a corresponding plurality of comparison scores representative of the similarities between the first sequence sub-word unit label and the respective sub-word unit labels of the set. The second comparator is operable to compare, for each aligned pair, the second sequence sub-word unit label in the aligned pair with each of the plurality of sub-word unit labels from the set, to provide a further corresponding plurality of comparison scores representative of the similarities between the second sequence sub-word unit label and the respective sub-word unit labels of the set. The combiner is operable to combine the comparison scores obtained when comparing the first and second sequence sub-word unit labels in the aligned pair with the same sub-word unit label from the set, to generate a plurality of combined comparison scores. The third comparator is operable to compare, for each aligned pair, the combined comparison scores generated by the combiner for the aligned pair. The determiner operable to determine, for each aligned pair of sub-word unit labels, a sub-word unit label representative of the sub-word unit labels in the aligned pair in dependence upon a comparison result output by the third comparator for the aligned pair.

Initially, based on the above discussion, Baker is not seen to describe an aligner operate to align and compare sub-word unit labels of the first sequence with sub-word unit labels of the second sequence to form a number of aligned pairs of sub-word unit labels.

It is further pointed out that the first and second comparators of the present invention are operable to compare aligned pairs of sub-word unit labels. Accordingly, the realtime and offline recognizers of Baker, which are seen to merely generate lists of candidates for a spoken word, are not seen to in any way show the first and second

comparators of the present invention, which compare, for each aligned pair, the first (second) sequence sub-word unit label in the aligned pair with each of a plurality of sub-word unit labels taken from a set of predetermined sub-word unit labels, to provide a (further) corresponding plurality of comparison scores representative of the similarities between the first (second) sequence sub-word unit label and the respective sub-word unit labels of the set.

Finally, Applicants submit that nothing in Baker is seen to disclose the combiner, third comparator, and/or determiner of the present invention.

Therefore, for at least the foregoing reasons, Claim 28 is believed to be in condition for allowance. Further, Applicants submit that Claim 56 is believed to be in condition for allowance for at least the same reasons.

Claims 26 and 54

Claim 26 defines an apparatus for determining a sequence of sub-word unit labels representative of at least two word alternatives output by a word recognition unit in response to a common input word to be recognised. The apparatus comprises a receiver, a generator, an aligner, and a processor. The receiver is operable to receive the word alternatives output by the word recognition unit. The generator is operable to generate, for each received word alternative, a sequence of sub-word unit labels representative of the word alternative. The aligner is operable to align and compare the sub-word unit labels of each generated sequence of sub-word unit labels to identify a number aligned groups of sub-word unit labels. The processor is operable to process the aligned groups of sub-word unit labels identified by the aligner, to determine an output sequence of sub-word unit

labels representative of the received word alternatives.

The applied art, namely Tran, is not seen to disclose the above-identified features.

More particularly, at col. 18, lines 40 to 67, Tran is seen to describe generating sequences of sub-word units. However, Applicants submit that the sub-word units generated in Tran are used to identify possible word alternatives, and are not seen to be generated from word alternatives output by a word recognizer, as recited in the present invention. In addition, at col. 19, lines 1 to 67, Tran is seen to describe using a time warping technique to compare input speech samples with vocabulary speech samples.

Applicants therefore submit that Tran, and in particular the cited portion thereof, is not seen to disclose an apparatus comprising a receiver, a generator, an aligner, and a processor, as in the present invention.

Therefore, for at least the foregoing reasons, Claim 26 is believed to be in condition for allowance. Further, Applicants submit that Claim 54 is believed to be in condition for allowance for at least the same reasons.

New Claims 59 to 65

Based on the above discussion, the applied art is not seen to disclose each and every one of the features recited in new Claims 59 to 65. Accordingly, Applicants submit that these claims are also in condition for allowance.

The other are each dependent from the independent claims discussed above and are therefore believed patentable for the same reasons. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual

consideration of each on its own merits is respectfully requested.

In this regard, Applicant has reviewed the art applied to the dependent claims, namely Oliver and Appelbaum, and it is not seen to remedy the deficiencies noted above with respect to Baker and Tran.

In view of the foregoing, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

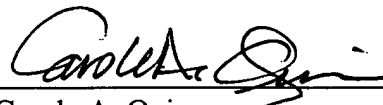
SECOND REQUEST TO CONSIDER CITED ART

The Office Action indicates that the foreign references cited in the April 12, 2002 Information Disclosure Statement failed to comply with 37 C.F.R. § 1.198(a)(2), which requires that a copy of each of the cited foreign references be submitted with the Information Disclosure Statement.

In response, submitted herewith is a copy of a stamped postcard receipt acknowledging the USPTO's receipt of the six documents, including the four foreign references, cited in the Information Disclosure Statement. Accordingly, the Examiner is respectfully requested to indicate consideration of the art cited in the April 12, 2002 Information Disclosure Statement, and to initial the appropriate portion of Form PTO-1449.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should be directed to our address given below.

Respectfully submitted,



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